

CLAIMS:

1. A powered hammer comprising:
 - a hammer housing;
 - a hollow spindle located in the housing;
 - a hammering mechanism including a piston reciprocatingly mounted within the spindle; the piston including at least one rearwardly extending piston arm and a rearward protrusion, the piston arm and the protrusion defining a recess between the piston arm and the protrusion;
 - a wobble drive arrangement drivingly connected to the piston;
 - a trunnion arrangement drivingly connected between the piston and the wobble drive arrangement, the trunnion arrangement including a cross bolt and at least one washer, the washer at least partly located within the recess, and the cross bolt rotatably connected to the piston arm; and
 - wherein the recesses is shaped so as to support the washer in an assembled position.
2. A hammer according to claim 1 wherein the washer fits around the cross bolt and adjacent to the piston.
3. A hammer according to claim 1 wherein the protrusion defines an arcuate bearing surface and the cross bolt is supportable by the arcuate bearing surface.
4. A hammer according to claim 1 wherein the piston includes an arcuate bearing surface, the arcuate bearing surface partly defines the recess, and a periphery of the washer is supportable by the arcuate bearing surface.
5. A hammer according to claim 1 wherein the piston arm defines a through hole and the cross bolt is mounted through the through hole.
6. A hammer according to claim 5 wherein the washers define a circular cutout and the washer cutout is aligned with the through hole.
7. A hammer according to claim 1 wherein the wobble drive arrangement includes a wobble pin, and the cross bolt defines a radial through hole, and the wobble pin protrudes into the through hole.

8. A hammer according to claim 1 wherein the wobble drive arrangement includes a rotatably driven wobble sleeve, a wobble ring mounted on the wobble sleeve via a bearing, and a wobble pin extending radially outwardly of the wobble ring for engaging the cross bolt.
9. A hammer according to claim 1 wherein the hammering mechanism includes a ram, and the piston is a hollow piston, and the ram is reciprocatingly mounted within the hollow piston such that during hammering the reciprocating drive from the piston is transferred to the ram by a closed air cushion formed within the hollow piston.
10. A hammer according to claim 1 wherein the hammering mechanism includes a ram, the piston is a solid piston, and the ram is reciprocatingly mounted within the spindle forwardly of the piston in such a way that during hammering the reciprocating drive from the piston is transferred to the ram by a closed air cushion formed within the spindle.
11. A hammer according to claim 1 wherein the piston is made of aluminium, the cross bolt is made of steel and the washer is made of steel.
12. A piston for a hammering mechanism of a powered hammer including a hollow spindle, a trunnion cross bolt, and at least one washer defining a central hole, the piston comprising:
a cylindrically shaped piston body, slideably mountable within the hollow spindle, and including a rearward end;
at least one piston arm extending rearwardly from the rearward end of the piston body, the piston arm defining a through hole within which the trunnion cross bolt is mountable;
a protrusion located on the rearward end of the piston body, the piston arm and the protrusion defining a recess, the recesses shaped to support the washer between the protrusion and the piston arm so that the central hole of the washer and the through hole of the piston arm are substantially aligned in preparation for the mounting of the trunnion cross bolt.
13. A piston according to claim 12 wherein the protrusion includes an arcuate bearing surface.

14. A piston according to claim 12 wherein the rearward end of the piston body includes an arcuate bearing surface between the piston arm and the protrusion, and the arcuate bearing surface is shaped to substantially conform to the washer.

15. A method of assembling a piston and trunnion arrangement sub-assembly of an electrically powered hammer comprising the steps of:

providing a piston including a piston arm and a protrusion, and defining a recess between the piston arm and the protrusion; and the piston arm defining a through hole;

providing a washer defining a bolt hole;

supporting the washer in the recesses; and

mounting a trunnion cross bolt by passing the cross bolt through the washer bolt hole and the piston arm through hole.